



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/497,515	02/04/2000	Shuji Hitomi	Q57834	7579
7590	04/13/2004		EXAMINER	
Sughrué Mion Zinn MacPeak & Seas PLLC 2100 Pennsylvania Avenue NW Washington, DC 20037			MERCADO, JULIAN A	
			ART UNIT	PAPER NUMBER
			1745	

DATE MAILED: 04/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	09/497,515	HITOMI
	<b>Examiner</b>	<b>Art Unit</b>
	Julian Mercado	1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

1)  Responsive to communication(s) filed on 18 December 2003.

2a)  This action is **FINAL**.                            2b)  This action is non-final.

3)  Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## **Disposition of Claims**

4)  Claim(s) 1-20 is/are pending in the application.  
4a) Of the above claim(s) 11-20 is/are withdrawn from consideration.

5)  Claim(s) \_\_\_\_\_ is/are allowed.

6)  Claim(s) 1-10 is/are rejected.

7)  Claim(s) \_\_\_\_\_ is/are objected to.

8)  Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

9)  The specification is objected to by the Examiner.

10)  The drawing(s) filed on \_\_\_\_\_ is/are: a)  accepted or b)  objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)  The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a)  All b)  Some \* c)  None of:  
1.  Certified copies of the priority documents have been received.  
2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3.  Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1)  Notice of References Cited (PTO-892)  
2)  Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3)  Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_ .

4)  Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_ .

5)  Notice of Informal Patent Application (PTO-152)

6)  Other: \_\_\_\_\_ .

## **DETAILED ACTION**

### ***Remarks/Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on December 18, 2003 has been entered.

Claims 1-10 are pending for consideration. Independent claims 1 and 3 are currently amended.

### ***Claim Rejections - 35 USC § 102 and 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

The rejection of claims 1-7, 9 and 10 under 35 U.S.C. 102(b) based on Mussell et al. (U.S. Pat. 5,620,807), and the rejection of claim 8 under 35 U.S.C. 103(a) based on Mussell et al., has each been withdrawn. Applicant's amendment, in further defining that the porous polymer does not substantially contain anything except its polymer material, has obviated the rejection(s) based on Mussell et al. in that Mussell et al. teaches a polymer composition containing dissolved polymer solids and hydrophobic fillers, the latter serving to increase the porosity and mean pore size of the solidified composition. That is, the pores in Mussell et al. are not taught or suggested to be in the polymer material in itself.

***New Rejection:***

Claims 1-6 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Samuels et al. (U.S. Pat. 4,524,114)

Regarding independent claim 1, Samuels et al. teaches an electrode for a fuel cell comprising a catalyst layer [2-6] and a polymer [1]. The polymer is specifically disclosed as a porous polymer and thus having pores in the polymer itself, “[a]t the air side of the electrode is a hydrophobic gas permeable layer 1 which is constructed of a material such as a sintered microporous fluorocarbon polymer sheet”. (col. 3 line 35-38, also applies to dependent claim 10) The catalyst layer contains a solid polymer electrolyte [7]. (col. 5 line 26-40) Figure 1 shows that the porous polymer [1] is on the surface of the catalyst layer [2-6]. (applies to dependent claims 2, 4)

Independent claim 3 additionally recites a gas diffusion layer. In Samuels et al., a gas diffusion layer [2, 3] forms the bulk of the electrode. (col. 3 line 49-59)

As to dependent claims 5 and 6, it has been established in the file prosecution history that a fluorocarbon polymer, much like that disclosed by applicant, has no proton or ion-exchange function. Since Samuels et al. teaches a fluorocarbon polymer consistent with applicant's disclosure, it is reasonably presumed to similarly have no ion-exchange function as claimed. The pores in the fluorocarbon polymer of Samuels et al. are also asserted to have a three-dimensional structure such as shown in cross-section in Figure 1, i.e. the pores or spacings in the porous polymer would naturally extend in the x, y and z directions.

Claims 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Samuels et al. as applied to claims 1-6 and 10 above, in view of Yamazaki (U.S. Pat. 4,110,392).

The teachings of Samuels et al. are discussed above.

Samuels et al. does not explicitly teach the pore diameter or porosity range of the fluorocarbon polymer. However, Yamazaki teaches microporous fluorocarbon Teflon® sheets, much like that employed by Samuels et al., having porosities of less than 1  $\mu\text{m}$  or 0.05  $\mu\text{m}$ . (Table 1, Example No. 1 under “pore size (A)”, wherein 398  $\text{\AA}$  equals 0.04  $\mu\text{m}$  by conversion) The same sheet has a porosity range of 47% which is comfortably within applicant’s claimed range of 45% to 95%. (Table 1, under “porosity (%))” Thus, the skilled artisan would find obvious to employ the claimed pore diameter and porosity range in Samuels et al. in order to optimize the permeability parameters of the polymer sheet in its use as a gas permeable layer.

### ***Response to Arguments***

Applicant's arguments with respect to a forthcoming rejection based on Mussell et al. have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

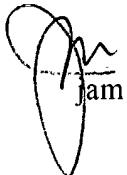
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julian Mercado whose telephone number is (571) 272-1289. The examiner can normally be reached on Monday through Friday.

Art Unit: 1745

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan, can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



jam



Patrick Ryan  
Supervisory Patent Examiner  
Technology Center 1700